ZooKeys 2: 189-202 (2008)
doi: 10.3897/zookeys.2.3
www.pensoftonline.net/zookeys

RESEARCH ARTICLE

A peer-reviewed open-access journal
ZooKeys
Launched to accelerate biodiversity research

Contributions to the knowledge of Atlantic Canadian Histeridae (Coleoptera)

Christopher G. Majka

Nova Scotia Museum, 1747 Summer Street, Halifax, Nova Scotia, Canada

Corresponding author: *Christopher G. Majka* (c.majka@ns.sympatico.ca)

Guest editor: *Thomas Lackner* | Received 24 April 2008 | Accepted 19 August 2008 | Published 5 September 2008

Citation: Majka CG (2008) Contributions to the knowledge of Atlantic Canadian Histeridae (Coleoptera). In: Majka CG, Klimaszewski J (Eds) Biodiversity, Biosystematics, and Ecology of Canadian Coleoptera. ZooKeys 2: 189-202. doi: 10.3897/zookeys.2.3

Abstract

New records of Histeridae from Atlantic Canada are reported. Three species are newly recorded from Prince Edward Island and two from New Brunswick, one of which, the adventive Palearctic *Atholus bimaculatus* (Linnaeus), is newly recorded from Atlantic Canada as a whole. These new records increase the known histerid fauna of the region to 37 species, 30 native and 7 introduced ones. The regional zoogeography of the Histeridae is examined focusing on differences between the faunal composition of the various provinces and the possible reasons responsible for these. The island faunas of Cape Breton, Prince Edward Island, and insular Newfoundland are examined. All have reduced faunas in comparison with the mainland perhaps as a result of island-associated diminutions, an area effect, a paucity of collecting, or a combination of these factors. Those of Cape Breton and Prince Edward Island are proportionately similar to those of other families of Coleoptera, whereas that of Newfoundland (only 10% of the mainland fauna) is significantly less, a circumstance that deserves further investigation.

Seven species of adventive histerids have been recorded in the region. The average dates of first detection of these species are much later than the earliest records of these species in North America and comparatively later than is the case with other suites of adventive species in the Staphylinidae and Carabidae, perhaps as a result of the sparse attention the Histeridae have historically received by coleopterists in the region. Most of the adventive histerids are known to be synanthropic and may have been introduced to the region association with the importation of livestock and materials related to animal husbandry. The Histeridae of the region largely fall into one of several trophic guilds: coastal species and those associated with beach-drift material; species associated with bird nests; species associated with mammal nests; myrmecophilous species; saproxylic species found in sub-cortical environments; and generalist species found in a wide variety of decomposing situations.

Keywords

Coleoptera, Histeridae, Atlantic Canada, biodiversity, zoogeography, introduced species, new records

Copyright *Christopher G. Majka*. This is an open access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Introduction

Historically the hister beetles (Histeridae) have been relatively neglected by both taxonomists and ecologists. Many species occur in decaying materials of all kinds, in ant nests, or under the bark of trees, and have received little attention. This has been unfortunate since the family is both economically and ecologically significant. Those species found in decaying organic matter are predaceous, feeding on fly larvae, while the sub-cortical species are predaceous on various wood and bark-boring insects. Other species are myrmecophilous and live in association with ants.

Over 3,800 species are known worldwide of which 435 species have been recorded in North America and 135 in Canada (Kovarik and Caterino 2000; Marske and Ivie 2003; Bousquet and Laplante 2006). Twenty-one species were recorded in Atlantic Canada by Davies (1991), although the records of *Plegaderus transversus* (Say, 1825) and *Paromalus bistriatus* Erichson, 1834 from Newfoundland were apparently in error. They were not included in the comprehensive review and survey of the Canadian fauna by Bousquet and Laplante (2006) that recorded 36 species from the Atlantic Provinces. In their review 22 species are recorded from New Brunswick, 32 from Nova Scotia, 5 from insular Newfoundland, and 11 from Prince Edward Island. The present paper, based on ongoing research on the biodiversity of the Coleoptera of the region, reports new provincial records of five species from Atlantic Canada, including one, *Atholus bimaculatus* (Linnaeus, 1758), newly recorded for the region.

Methods and conventions

Codens (following Evenhuis 2007) of collections examined and referred to in this study are:

ACPE Agriculture and Agri-food Canada, Charlottetown, Prince Edward Island
CGMC Christopher G. Majka collection, Halifax, Nova Scotia
NBM New Brunswick Museum, Saint John, New Brunswick
UPEI University of Prince Edward Island, Charlottetown, Prince Edward Island

The systematics, taxonomy, and nomenclature follow Bousquet and Laplante (2006).

Results

Aeletes politus (LeConte, 1853), *Paromalus teres* LeConte, 1878, and *Margarinotus faedatus* (LeConte, 1845) are newly recorded from Prince Edward Island; *Hister curtatus* LeConte, 1844 and *Atholus bimaculatus* are newly recorded from New Brunswick, the latter species being newly recorded for Atlantic Canada. The

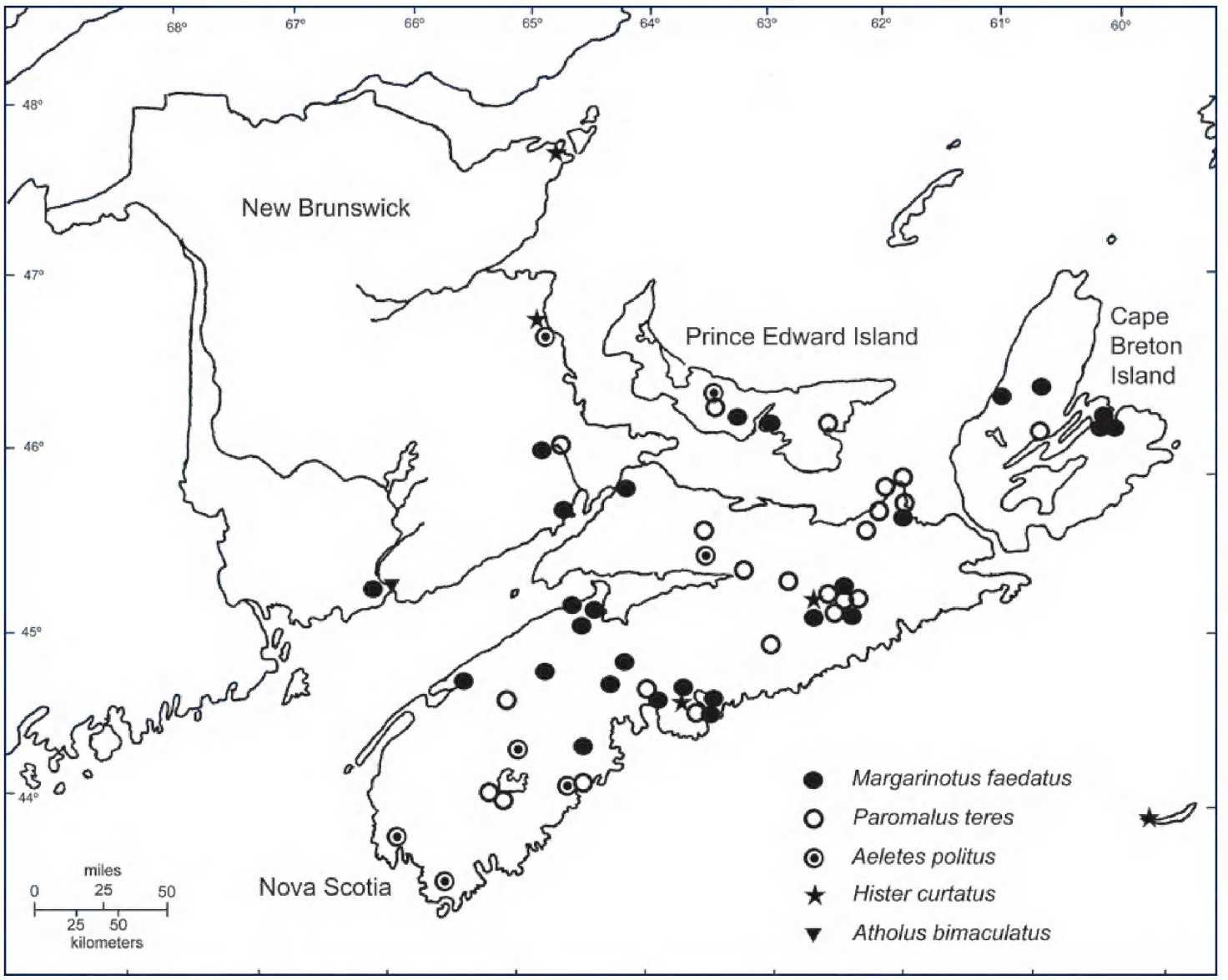

Fig. 1. The distribution of *Margarinotus faedatus, Paromalus teres, Aeletes politus, Hister curtatus,* and *Atholus bimaculatus* in Atlantic Canada.

known distribution of these five species in Atlantic Canada is shown in Figure 1. Specific details follow.

Aeletes politus (LeConte, 1853)

Prince Edward Island: Queens Co.: Trout River, 28.VI.2003, C.G. Majka, brackish marsh, (1, CGMC).

Aeletes politus is newly recorded on Prince Edward Island. There are scattered records from throughout the Maritime Provinces, although it has not been recorded on Cape Breton Island (Fig. 1). It is known in Canada from Ontario, Quebec, New Brunswick, and Nova Scotia (with an isolated record from west-central Alberta), and occurs south to Florida in the United States. It is found in forest floor litter, log litter, bracket fungi, tree holes, and compost (Bousquet and Laplante 2006). The above record from a brackish marsh represents an unusual habitat for this species, possibly attracted to the site by accumulations of decomposing litter.

Paromalus teres LeConte, 1878

Prince Edward Island: Kings Co.: Woodville Mills, 23.VII.2001, C.G. Majka, *Dryocoetes autographus* burrows in *Picea rubens*, (1, CGMC); **Queens Co.:** St. Patricks, 19.VII.2001, 14.VII.2002, 17.VIII.2002, 18.VIII.2002, *Dryocoetes affaber, Ips borealis,* and *Polygraphus rufipennis* burrows in *Picea rubens*, (7, CGMC).

Paromalus teres is newly recorded on Prince Edward Island. The species is generally distributed in the Maritime Provinces, although few records are known from New Brunswick (Fig. 1). It has been recorded in Canada from the Northwest Territories, Alberta, Ontario, Quebec, New Brunswick, and Nova Scotia and occurs in neighbouring states in the United States from Minnesota to New York and Connecticut. It is found under the bark of dead spruces and pines (Bousquet and Laplante 2006).

Margarinotus faedatus (LeConte, 1845)

Prince Edward Island: 1974-1983, (6, UPEI); **Queens Co.:** Harrington, 9.VIII.2004, C. Noronha, barley field, (1, ACPE); Mount Herbert, 1920-1924, J.R. Mutch, (1, UPEI).

Margarinotus faedatus is newly recorded on Prince Edward Island. The species is widely distributed in the Maritime Provinces (Fig. 1). It has been recorded in Canada from Ontario, Quebec, New Brunswick, and Nova Scotia, and occurs south to Texas and Georgia in the United States. It is found in decaying organic matter such as carrion, dung, and rotten mushrooms (Bousquet and Laplante 2006).

Hister curtatus LeConte, 1844

New Brunswick: Gloucester Co.: 9.VIII.1980, G. Gallien, (1, UMNB); **Kent Co.:** Kouchibouguac National Park, 13.VII.1979, Y. Chaisson, (1, UMNB).

Hister curtatus is newly recorded in New Brunswick. This species has been recorded in Canada from southern Manitoba, Ontario, and Quebec as well as from Sable Island and from one site on the mainland (Lake Little, Halifax County) of Nova Scotia (Fig. 1). It is found in leaf litter and carrion (Bousquet and Laplante 2006).

Atholus bimaculatus (Linnaeus, 1758)

New Brunswick: Saint John Co.: Saint John, 27.III.1898, P. R. McIntosh, NBM.

Atholus bimaculatus is newly recorded in New Brunswick and in Atlantic Canada. This introduced, Palearctic hister beetle has been recorded in Canada from British Columbia east to southern Québec (Bousquet and Laplante 2006). In Europe, it is known throughout the continent east to at least southern and central Russia (Yélamos and

Lackner 2007). It is now almost cosmopolitan in distribution and is found in dung and decaying vegetable matter (Bousquet and Laplante 2006).

Discussion

These new records increase the known histerid fauna of New Brunswick to 24 species (20 native and 4 adventive), that of Prince Edward Island to 14 species (12 native and 2 adventive), and that of the Atlantic Canada to 37 species (30 native and 7 adventive) (Table 1).

Regional zoogeography

Examining the composition of the fauna, several trends become apparent. Four native species, *Plegaderus confusus* Bousquet & Laplante, 1999, *Geomysaprinus moniliatus* (Casey, 1916), *Hypocaccus bigener* (LeConte, 1844) and *Hister abbreviatus* Fabricius, 1775, have been found in New Brunswick but not in Nova Scotia. They are candidates for species that have, for climatic or other environmental reasons, reached the limit of their distribution in New Brunswick, or which have found the Northumberland Strait and/or the isthmus of Chignecto as obstacles to geographical dispersal. Alternatively, they could be present but have remained undetected. They represent 13.3% of the native histerid fauna, very similar to the 12.4% of the native elaterid fauna (Majka and Johnson 2008) and 13.5% of the native carabid fauna (Majka *et al.* 2007) found in New Brunswick but not in Nova Scotia.

There are ten native species, *Gnathoncus barbatus* Bousquet & Laplante, 2006, *Platysoma lecontei* Marseul, 1853, *Platysoma deficiens* (Casey, 1924), *Margarinotus cognatus* (LeConte, 1844), *Margarinotus confusus* Wenzel, 1944, *Margarinotus egregius* (Casey, 1916), *Margarinotus marginicollis* (LeConte, 1845), *Margarinotus stygicus* (LeConte, 1845), *Spilodiscus arcuatus* (Say, 1825), and *Atholus perplexus* (LeConte, 1863), which have been found in Nova Scotia and not in New Brunswick. It is probable that many of these occur in New Brunswick but have not been detected as a result of the comparative paucity of collecting effort in the latter province. However, two species, *M. stygicus* and *S. arcuatus*, have not otherwise been recorded in Atlantic Canada nor from Québec. The Nova Scotia populations of both appear to be disjunct and isolated from the balance of the range of these species. *Margarinotus stygicus,* associated with mammal nests, is otherwise found in the United States north to southern Ontario and Rhode Island, whereas *S. arcuatus* is a primarily coastal species ranging from the Florida panhandle north to New Hampshire (Bousquet and Laplante 2006). It is possible that these species may have colonized Nova Scotia from the New England states (northeastern U.S.A.) across post-glacial, emergent land-bridges and island chains that existed between Cape Cod, Georges Bank, and the continental shelf of Nova Scotia from circa 14,500 to 8,000 years

Table 1. Atlantic Canadian Histeridae

Species	NB	NS	CB	PE	NF	Trophic Category	Habitat	Regional Distribution
Abraeinae								
Plegaderini								
Plegaderus confusus Bousquet & Laplante	1					SX	subcortical: deciduous	NH, NY, ON, QC
Plegaderus sayi Marseul	1	1	1			SX	subcortical: conifers	MA, ME, NH, ON, QC
Acritini								
Aeletes politus (LeConte)	1	1	1	1		SP	litter, fungi, tree holes, compost	MA, ME, NH, ON, QC, RI
Saprininae								
Gnathoncus barbatus Bousquet & Laplante		1	1			SP	bird nests	ON, QC
Gnathoncus communis (Marseul) †		1				SP	bird nests	ME, NH, ON, QC
Gnathoncus rotundatus (Kugelann) †	1	1			1	SP	synanthropic: bird nests	ON, QC
Euspilotus assimilis (Paykull)	1	1		1		SP	carrion	MA, ME, NH, ON, QC, RI
Geomysaprinus moniliatus (Casey)	1					SP	mammal nests	ME, NH, ON, QC
Hypocaccus bigener (LeConte)	1					SP	sand pits	NH, ON, QC
Hypocaccus fraternus (Say)	1	1	1	1	1	SP	seashore: beach drift	NH, ON, QC, RI
Baeckmanniolus dimidiatipennis (LeConte)	1	1	1	1	1	SP	seashore: beach drift	CT, ME, NH, NY, QC, RI
Dendrophilinae								
Dendrophilini								
Dendrophilus punctatus (Herbst) †		1				SX ?	deciduous trees Europe synanthropic: granaries, bird nests	NH, ON, QC, RI
Paromalini								
Carcinops pumilo (Erichson) †	1	1	1	1	1	SP	synanthropic: stables, mills, bird nests	MA, ME, NH, ON, QC, RI

Species	NB	NS	CB	PE	NF	Trophic Category	Habitat	Regional Distribution
Paromalus teres LeConte	1	1	1	1	1	SX	subcortical: conifers	CT, NH, NY, ON, QC
Histerinae								
Platysomatini								
Platysoma lecontei Marseul		1				SX	subcortical: deciduous	MA, ME, NH, ON, QC, RI
Platysoma coarctatum LeConte	1	1				SX	subcortical: conifers	MA, ME, NH, ON, QC, RI
Platysoma deficiens (Casey)		1				SX	subcortical: conifers	MA, ON, QC
Platysoma gracile LeConte	1	1				SX	subcortical: deciduous	NH, ON, QC
Histerini								
Margarinotus brunneus (Fabricius) †	1	1	1	1		SP	carrion, decaying vegetation	MA, NH, ON, QC
Margarinotus cognatus (LeConte)		1				SP	?	ME, NH, ON, QC, RI
Margarinotus confusus Wentzel		1				SP	mammal nests	NH, ON, QC
Margarinotus faedatus (LeConte)	1	1	1	1		SP	carrion, dung, fungi	ME, NH, ON, QC
Margarinotus egregius (Casey)		1				SP	mammal nests, dung, carrion	NH, ON, QC
Margarinotus hudsonicus (Casey)	1	1	1			SP	fungi, carrion, dung	ME, NH, ON, QC
Margarinotus immunis (Erichson)	1	1		1		SP	carrion, decaying vegetation	NH, ON, QC, RI
Margarinotus interruptus (de Beauvois)	1	1		1		SP	dung, carrion	NH, ON, QC, RI
Margarinotus lecontei Wenzel	1	1		1		SP	carrion, dung, fungi	MA, ME, NH, ON, QC
Margarinotus merdarius (Hoffman) †		1	1			SP	synanthropic: bird nests, dung, compost	ME, NH, ON, QC, RI
Margarinotus marginicollis (LeConte)		1				SP	mammal nests	MA, NH, ON, QC, RI
Margarinotus stygicus (LeConte)		1				SP	mammal nests	ON, RI
Hister abbreviatus Fabricius	1					SP	carrion, dung, fungi	MA, NH, ON, QC
Hister curtatus LeConte	1	1				SP	leaf litter, carrion	ME, NH, QC
Hister furtivus LeConte	1	1	1	1		SP	carrion, dung, fungi	MA, ME, NH, ON, QC, RI
Spilodiscus arcuatus (Say)		1				SP	seashore: sand dunes	NH, RI
*Psiloscelis planipes (*LeConte)	1	1	1	1		MY?	ant nests ?	MA, ON, QC, MA, RI

Species	NB	NS	CB	PE	NF	Trophic Category	Habitat	Regional Distribution
Atholus bimaculatus (Linnaeus) †	1					SP	dung, decaying vegetation	NH, ON, QC
Atholus perplexus (LeConte)		1		1		SP	mammal nests, dung	ON, QC, PE
Totals	24	32	13	14	5			

Notes: NB, New Brunswick; NS, Nova Scotia; CB, Cape Breton Island; PE, Prince Edward Island; NF, insular Newfoundland; MY, Myrmecophilous; SP, Saprophytic; SX, Saproxylic; †, adventive Palearctic species.

Regional Distribution: Northeastern North America (in addition to the provinces of Atlantic Canada) is taken to include of the following jurisdictions: CT, Connecticut; MA, Massachusetts; ME, Maine; NH, New Hampshire; NY, New York; ON, Ontario; QC, Québec; RI, Rhode Island; PM, Saint-Pierre et Miquelon; VT, Vermont.

BP (King 1996). This mechanism is well documented in the case of Nova Scotia's coastal-plain flora (Keddy and Wisheu 1989).

Island faunas

The native island faunas of Cape Breton (10 species, i.e., 33% of the native fauna), with a land area of 10,311 km^2 and 1.5 km from the mainland, Prince Edward Island (11 species, i.e., 37%), with a land area of 5,660 km^2 and 13 km from the mainland, and insular Newfoundland (3 species, i.e. 10%), with a land area of 111,390 km^2, 18 km distant from Labrador and 110 km from Cape Breton Island, are reduced in comparison with the mainland fauna. This may represent island-associated diminutions, an area effect, a paucity of collecting, or a combination of these factors. In comparison, 58% of native Carabidae and 50% of native Elateridae of the Maritime Provinces have been recorded on Cape Breton, and 47% of the region's native Carabidae and 38% of the Elateridae have been recorded on Prince Edward Island (Majka and Johnson 2008; Majka *et al.* 2007b, 2008). There are no species found on any of these islands that are not also present on the mainland.

The native histerid fauna of insular Newfoundland (3 species, i.e. 10%) appears to be particularly impoverished. In comparison, 47% of the native Carabidae of Atlantic Canada have been recorded on Newfoundland (Majka et al. 2007b). It is unclear if this low representation is as a result of insufficient collecting or if other factors are responsible. Two of the native species, *Hypocaccus fraternus* (Say, 1825) and *Baeckmanniolus dimidiatipennis* (LeConte, 1824), are coastal species associated with beach drift (see below) while *Paromalus teres* is a saproxylic species found under the bark of coniferous trees. It may be that many North American histerids are less tolerant of colder, northern environmental circumstances. Bousquet and Laplante (2006) record only three histerids from the Yukon Territory, four from the Northwest Territories (all native species), and none from Nunavut or Labrador from a Canadian fauna of 135 species. *Hypocaccus fraternus* and *B. dimidiatipennis* have only been recorded in the extreme southwest of Newfoundland whereas *P. teres* is known only from the Avalon peninsula in the southeast of the province.

The beetle faunas of smaller islands in the region have been comparatively little investigated. Majka et al. (in press) reported *H. fraternus* in beach-drift material from Scatarie Island (2 km from the Nova Scotia coast) and Ogden and Majka (unpublished data) have found *H. fraternus* and *B. dimidiatipennis* in beach-drift material on Brier Island (1 km from the Nova Scotia coast). Wright (1989) recorded both species on sand beaches, as well as under carrion and horse dung, on Sable Island (160 km from the Nova Scotia coast). As halo-tolerant beach-drift inhabitants, these two species would appear to be able to disperse readily, either aerially or on floating material, to coastal and island environments. Wright (1989) also recorded *Hister curtatus* as common on Sable Island, a rather surprising discovery given the apparent scarcity of this species in the region as a whole. In discussing the mite (Acari) fauna of Sable Island

Majka et al. (2007a) raise the possibility that such Sable Island "relict species" may have arrived there via post-glacial island chains and land bridges across the continental shelf and have subsequently been isolated by rising sea-levels, a circumstance which may also apply to the population of *H. curtatus* present there.

Adventive species

Seven species of adventive histerids have been recorded in the region (Table 2). The introductions of these species to North America evidently took place a considerable time ago since all seven are known from the continent from dates ranging from 1825 to 1862 with the mean date of first detection being 1839. In contrast, these species in Atlantic Canada have been recorded only much more recently. With the exception of *Atholus bimaculatus,* which was recorded in New Brunswick in 1898, the other six species have only been first detected in the region between 1948 and 1993 (mean = 1960), on average 121 years later than in North America. In contrast, of the 79 species of adventive Staphylinidae known in the Maritime Provinces, the mean date of their first detection in North America is 1904, whereas the mean date of first detection in the region is 1967, on average 63 years later (derived from Majka and Klimaszewski 2008). For the 35 adventive Carabidae found in the Maritime Provinces, the mean date of first detection in North America is 1916 whereas the mean date of first detection in the region is 1943, a difference of only 27 years (derived from Majka et al. 2007b). These differences are probably in

Table 2. Dates of first detection of adventive Histeridae in Atlantic Canada

Species	NB	NS	PEI	NF	North America	Source
Gnathoncus communis (Marseul)		**1967**			1862	Marseul (1862)
Gnathoncus rotundatus (Kugelann)	?	**1965**		1981	1844	LeConte (1844)
Dendrophilus punctatus (Herbst)		**1967**			1825	Say (1825)
Carcinops pumilo (Erichson)	2005	2003	1993	**1974**	1834	Erichson (1834)
Atholus bimaculatus (Linnaeus)	**1898**				1825	Say (1825)
Margarinotus brunneus (Fabricius)	1965	**1948**	1953		1837	Harris (1837)
Margarinotus merdarius (Hoffman)		**1983**			1845	LeConte (1845

Boldface entries signify the earliest dates for a species in the region.

large measure attributable to the different degrees of attention and collecting effort that these families have received in Atlantic Canada. The Carabidae have historically been much more extensively investigated than either the Staphylinidae or the Histeridae.

Lindroth (1957) and Brown (1950) both proposed that dry-ballast shipments commencing in the early 17th century and continuing until the early 19th century, were responsible for the introduction of many Carabidae and other species of Coleoptera frequenting coastal environments. However, in his extensive survey of the seven principal sites in southwestern England where dry ballast originated, Lindroth (1957) found only one histerid, *Margarinotus purpurascens* (Herbst, 1792). This species is known in Canada only from southwestern British Columbia (Bousquet and Laplante 2006).

In contrast, at least four of the adventive histerids found in Atlantic Canada, *Gnathoncus rotundatus* (Kugelann, 1792), *Dendrophilus punctatus* (Herbst, 1792), *Carcinops pumilo* (Erichson, 1834), and *Margarinotus merdarius* (Hoffman, 1803) are synanthropic species associated with stables, hen houses, mills, granaries, and similar areas related to the husbandry of animals, or with the storage of dried products (Bousquet and Laplante 2006). *Atholus bimaculatus*, *M. merdarius*, and *Margarinotus brunneus* (Fabricius, 1775) are associated with dung, carrion, and decaying vegetation while *Gnathoncus communis* (Marseul, 1862) is found in bird nests. The synanthropic habits of these species suggest that they may have been introduced to the region, and to the continent, in association with the importation of livestock and materials related to animal husbandry. In this regard, *D. punctatus* is an apparent anomaly. Although in Europe it is most frequently found in bird nests, granaries, and mills, in North America it seems to be primarily a saproxylic species found under bark and in deciduous tree hollows (Bousquet and Laplante 2006). Possibly, in the New World, it has reverted to ancestral, pre-synanthropic habits.

Habits and habitats

Examining the environment column of Table 1, 28 species of Histeridae are predators found in saprophytic environments (dung, carrion, decaying vegetation, decomposing fungi, etc.); eight are saproxylic species, predators in subcortical or decaying wood environments; and one, *Psiloscelis planipes* (LeConte, 1852), is probably a myrmecophilous species associated with ant nests. The "habitat" column of Table 1 provides further bionomic details with respect to these species, indicating that a variety of habitats are utilized.

Hypocaccus fraternus and *B. dimidiatipennis* are largely associated with coastal beach drift environments and *Hypocaccus bigener* (LeConte, 1844) and *Spilodiscus arcuatus* (Say, 1825) are found in sand dune and sand pit areas. Species such as *Gnathoncus barbatus, G. communis, G. rotundatus, C. pumilo,* and *M. merdarius* are largely or occasionally associated with bird nests while *Geomysaprinus moniliatus, M. confusus, M.*

egregius, M. marginicollis, M. stygicus, and *A. perplexus* are in large measure associated with mammal nests.

A substantial number of species including *A. politus*, *M. brunneus, M. faedatus*, *M. egregius, Margarinotus hudsonicus* (Casey, 1893), *Margarinotus immunis* (Erichson, 1834), *Margarinotus interruptus* (Palisot de Beauvois, 1818), *Margarinotus lecontei* Wenzel, 1944, *M. merdarius, Hister abbreviatus* Fabricius, 1775, *H. curtatus*, *Hister furtivus* LeConte, 1859, and *A. bimaculatus* appear to be generalist predators found in many kinds of decomposing situations, although *Euspilotus assimilis* (Paykull, 1811) appears to favour carrion. The beach drift species, the bird and mammal nest species, and generalist decomposing environment species, are all predators of the larvae and eggs of Diptera (Kovarik and Caterino 2000).

Although specific information with respect to *P. planipes* is lacking, other species in this genus are associated with ants. Adults capture and feed on ants (Kovarik and Caterino 2000).

The guild of subcortical histerids found in Atlantic Canada include *Plegaderus confusus, Plegaderus sayi* Marseul, 1856, *Paromalus teres, Platysoma lecontei* Marseul, 1853, *Platysoma coarctatum* LeConte, 1844, *Platysoma deficiens* (Casey, 1924), *Platysoma gracile* LeConte, 1845, and *D. punctatus*. Of these, *P. confusus, P. lecontei,* and *D. punctatus* are associated with deciduous trees, while the other four species are found under the bark of conifers. Subcortical histerids feed on the larvae of wood-boring beetles, particularly those of the Scolytinae (Curculionidae) (Kovarik and Catarino 2000).

Conclusions

Although Bousquet and Laplante's (2006) survey and revision was a milestone in terms of developing an understanding of the Canadian histerid fauna, it is evident that there is more to be learned with respect to this interesting and important family in Atlantic Canada. The Histeridae of New Brunswick remain relatively little investigated and it is likely that many additional species remain to be found there. The dearth of species recorded from Newfoundland is unusual and further fieldwork is required to ascertain if this is due to a genuine paucity of species, or is an artifact of insufficient collecting.

Acknowledgements

Sincere thanks to the Board of Governors of the Nova Scotia Museum for their financial assistance, and to Y. Bousquet and S. Laplante (Agriculture and Agri-food Canada, Ottawa) for their assistance with determinations and in developing the author's understanding of the Histeridae. Thanks also to D. Giberson (University of Prince Edward Island), D. McAlpine (New Brunswick Museum), and C. Noronha (Agriculture and Agri-food Canada, Charlottetown) for making specimens and records available. Thanks also to J. Klimaszewski (Canadian Forest Service) and L. Penev (Pen-

soft Publishers) for editorial assistance. Yves Bousquet and Tomas Lackner (Hokkaido University Museum) read an earlier draft of this paper and made many constructive suggestions. Many thanks to C. Ewing, D. Christianson, and A. Hebda (Nova Scotia Museum) for ongoing support and encouragement.

References

Bousquet Y, Laplante S (2006) Coleoptera Histeridae: The Insects and Arachnids of Canada, part 24. NRC Research Press, Ottawa, 485 pp.

Brown WJ (1950) The extralimital distribution of some species of Coleoptera. The Canadian Entomologist 82: 197-205.

Davies A (1991) Family Histeridae: hister beetles. In: Bousquet Y (Ed) Checklist of Beetles of Canada and Alaska. Agriculture Canada Publication 1861/E: 135-141.

Evenhuis NL (2007) Abbreviations for insect and spider collections of the world. http://hbs.bishopmuseum.org/codens/codens-inst.html [accessed 17 June 2008]

Keddy PA, Wisheu IC (1989) Ecology, biogeography, and conservation of coastal plain plants: some general principles from the study of Nova Scotian wetlands. Rhodora 91: 72-94.

King LH (1996) Late Wisconsin ice retreat from the Scotian Shelf. Geological Society of America Bulletin 108: 1056-1067.

Kovarik PW, Caterino MS (2000) Histeridae Gyllenhal, 1808. In: Arnett RH, Jr, Thomas MC (Eds) American Beetles, 1. Archostemata, Myxophaga, Adephaga, Polyphaga: Staphyliniformia. CRC Press, Boca Raton, 212-227.

Lindroth CH (1957) The faunal connections between Europe and North America. J. Wiley and Sons, New York, 344 pp.

Majka CG, Behan-Pelletier V, Bajerlein D, Bloszyk J, Krantz GW, Lucas Z, OConnor B, Smith IM (2007a) New records of mites (Arachnida: Acari) from Sable Island, Nova Scotia. The Canadian Entomologist 139: 690-699.

Majka CG, Bousquet Y, Noronha C, Smith ME (2008) The distribution, zoogeography, and composition of Prince Edward Island Carabidae (Coleoptera). The Canadian Entomologist 140(1): 128-141.

Majka CG, Bousquet Y, Westby S (2007b) The ground beetles (Coleoptera: Carabidae) of the Maritime Provinces of Canada: review of collecting, new records, and observations on composition, zoogeography, and historical origins. Zootaxa 1590: 1-36.

Majka CG, Johnson PJ (2008) The Elateridae (Coleoptera) of the Maritime Provinces of Canada: taxonomic changes, new records, faunal composition, collecting history, and zoogeography. Zootaxa 1811: 1-33.

Majka CG, Klimaszewski J (2008) Introduced Staphylinidae (Coleoptera) in the Maritime Provinces of Canada. The Canadian Entomologist 140(1): 48-72.

Majka CG, Townsend SM, Aikens KR, Ogden J, MacDonald AM, McCorquodale DB. (in press) Beetles (Coleoptera) of Scatarie Island, Nova Scotia, Canada. Proceedings of the Nova Scotia Institute of Science.

Marske KA, Ivie MA (2003) Beetle Fauna of the United States and Canada. The Coleopterists Bulletin 57: 495-503.

Wright B (1989) The Fauna of Sable Island, Nova Scotia. Nova Scotia Museum Curatorial Report 68: 1-93.

Yélamos T, Lackner T (2007) Fauna Europea: Coleoptera, Histeridae. Fauna Europaea version 1.3. http://www.faunaeur.org [accessed 17 June 2008]